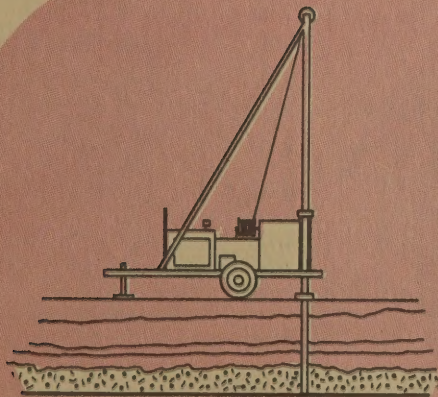
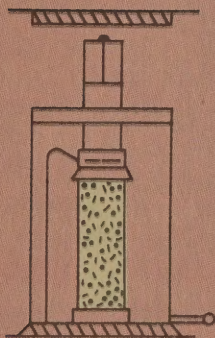


STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

RAYMOND T. SCHULER, COMMISSIONER



SOIL MECHANICS
BUREAU



TEST WELL REPORT
FIVE RIVERS
CONSERVATION EDUCATION CENTER
DELMAR, NEW YORK

MAY 1974

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
Raymond T. Schuler, Commissioner



1220 Washington Avenue, State Campus, Albany, New York 12226

May 15, 1974

Mr. Robert Proctor
Dept. of Environmental Conservation
Bureau of Facilities & Construction Management
Room 601
50 Wolf Road
Albany, New York 12205

SUBJECT: Water Well Development
Five Rivers Conservation
Education Center
Albany County
P.I.N. E103.00-701

Dear Sir:

As requested by your General Engineering Department, this Bureau has completed inspection of the development of the well at the subject location. Attached is a report by Mr. V. Bryant containing his observations and opinions of the well development and its future use.

We concur with Mr. Bryants comments.

Very truly yours,

L. H. Moore, Director
Soil Mechanics Bureau

By

A handwritten signature in cursive script, reading 'W. P. Moody', with a long horizontal flourish extending to the right.

W. P. Moody
Associate Soils Engineer

WPM:TED:SAS
Attachment

NYS DOT
Library
50 Wolf Road, POD 34
Albany, New York 12232

May 3, 1974

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SOIL MECHANICS BUREAU

TEST WELL REPORT
FOR

FIVE RIVERS

CONSERVATION EDUCATION CENTER

DELMAR, NEW YORK

By

Vance Bryant
Senior Engineering Geologist

May 1974

DATE May 8, 1974

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

SUBJECT WELL CONSTRUCTION
FIVE RIVERS CONSERVATION EDUCATION CENTER
ALBANY COUNTY, P.I.N. E103.00-701

FROM Vance Bryant, Senior Engineering Geologist

TO W. P. Moody, Associate Soils Engineer ✓

At the request of the Bureau of General Engineering, Department of Environmental Conservation, representatives of this Bureau were in charge of field inspection for new well construction at the Five Rivers facility at Delmar, New York. Mr. R. Brito was present during drilling of the well and the writer during testing of the well.

The well was progressed through clay overburden to a depth of eighty-one feet. At this point a mixture of clay and angular gravel size fragments were encountered. This material was designated "hardpan" by the driller on the basis of its drillability. As the well was progressed the "hardpan" was penetrated and a layer of sand and gravel was encountered. This relatively thin layer, two feet (+), was water bearing and was located immediately upon shale bedrock at a depth of ninety feet. The well was progressed three feet into bedrock.

Due to the nature and thickness of the unconsolidated strata it was decided not to attempt to screen the aquifer but to place sand and gravel within the casing and bump the casing back to expose the sand and gravel to the aquifer. This was accomplished and development proceeded. A twenty-four hour pump test was then performed starting at a pumping rate of 15 gallons per minute. During the pumping period it was found necessary to reduce the rate in order to obtain a stable and satisfactory drawdown. The water cleared during this period and samples were taken and submitted to a laboratory for testing of water quality (see results in Appendix).

On the basis of the pump test and the writer's previous experience it was considered advantageous to proceed with additional testing. Mr. Robert Proctor of the Department of Environmental Conservation was contacted and the situation explained to him. Since expenditures on the well were

within the Contract limits permission was given to proceed with the testing.

The additional testing was performed on April 23 and 24 at a pumping rate of ten and fifteen gallons per minute. On the basis of the test results it was determined that the well will produce somewhere between ten and fifteen G.P.M. at a satisfactory drawdown. Rather than attempting to determine more accurately the exact maximum rate, i. e. 12, 13, etc. G.P.M. several factors dictate that a maximum rate of ten G.P.M. be recommended for this well. These factors are as follows:

1. Because of the nature of the well finish (open end pipe) the pump should be placed as far off the bottom as practical.
2. The pump tests indicate that the water level will not become completely stable but will continue to drop at an uneven rate as water is drawn from the aquifer. This indicates that the aquifer is either not uniform in thickness and/or extent, and that recharge to the well will be somewhat inconsistent.
3. The pump test of April 23 (see Appendix) indicates that the well will yield water at a rate of 10 G.P.M. over at least a seven hour period with a drawdown of approximately 10 feet.

A pumping rate of ten G.P.M. is recommended and will allow the pump to be placed twenty-five feet off the bottom of the well with twenty-five feet of water remaining over the pump while it is in operation.

At such time that the exact needs of the Five Rivers facility are determined a pump cycle and storage requirement can be determined. Should further testing be required or considered advantageous in order to extend the cycle (time) and/or reduce storage requirements this office can be contacted for recommendations or to participate. It is stressed, however, that in any case, the pumping rate of ten G.P.M. not be exceeded without further consultation.

APPENDIX



PROPOSED WELL
LOCATION

ACTUAL WELL
LOCATION

Conc. Mon.

Conc. Mon.

BROODER
BLDG.

SIGN
SHOP

78

506

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DELMAR, NEW YORK

Location

See Location Plan included in Report

Drilling Data

Contractor: Dick Ferraioli, Inc.
Driller : Dick Ferraioli
Date Started: 4/4/74
Date Completed: 4/8/74

Well Data

Source of Water: Sand and Gravel
Overburden: Clay and Glacial Till
Static Level During Drilling: 30 Feet (+)
Depth of Well: 93 Feet below Ground.

Test Data

Date Started: 4/19/74
Date Completed: 4/24/74
Location of Pump Intake: 83.5 Feet below Ground
Static Level During Testing: 28-29 Feet below Ground
Yield: 10 G.P.M.
Drawdown: 9.5 Feet (+)

Pump Data

Make and Type: Valley 3 HP Submersible

WELL DETAILS

[illegible]

FIVE RIVERS CONSERVATION EDUCATION CENTER
DELMAR, NEW YORK

24 HOUR CONTINUOUS YIELD TEST

STATIC LEVEL - 28'5" BELOW ORIGINAL GROUND

PUMP INTAKE - 83½' BELOW ORIGINAL GROUND

<u>DATE</u>	<u>TIME</u>	<u>RATE (G.P.M.)</u>	<u>DYNAMIC LEVEL (FEET)</u>	<u>DRAWDOWN (FEET)</u>	<u>COMMENTS</u>
4/19/74	8:30 AM	---	28'5" (STATIC)	---	Start pumping
	8:45 AM	15	45'3"	16'10"	Water cloudy
	9:00 AM	15	53'10"	25'5"	
	9:15 AM	15	56'6"	28'1"	
	9:30 AM	15	59'0"	30'7"	
	10:00 AM	15	61'11"	33'6"	
	10:30 AM	15	65'0"	36'7"	
	11:00 AM	15	66'11"	38'6"	
	11:15 AM	15-	66'9"	38'4"	Rate dropped - readjusted to 15 GPM
	11:30 AM	15	69'6"	41'1"	
	12:00 NOON	15	73'3½"	44'10½"	Water still cloudy
	12:30 PM	15	80'10"	52'5"	Closed valve - 12 GPM
	12:45 PM	12	73'0"	44'7"	Water level rising
	1:00 PM	12	70'8"	42'3"	Water clearing slowly
	1:30 PM	12	68'3"	39'10"	
	2:00 PM	12	68'2"	39'9"	
	2:30 PM	12	68'4"	39'11"	
	3:00 PM	12	68'1½"	39'8½"	
	3:30 PM	12	68'0"	39'7"	Took bacteriological sample
	4:00 PM	12	68'4"	39'11"	
	5:00 PM	12	68'6"	40'1"	
	5:40 PM	12-	---	---	Rate dropped slightly opened valve to 12 GPM
	6:00 PM	12	73'1"	44'8"	
	6:30 PM	12	76'2"	47'9"	
	6:45 PM	10	77'1"	48'8"	Closed valve to 10 GPM
	7:00 PM	10	76'8"	48'3"	
	7:15 PM	10	76'7"	48'2"	Closed valve
	8:00 PM	10-	77'5"	49'0"	Water clearing
	9:00 PM	10-	77'11"	49'6"	
	10:00 PM	10-	77'9"	49'4"	
	11:00 PM	10-	78'10"	50'5"	
	12:00 PM	10-	77'9"	49'4"	

<u>DATE</u>	<u>TIME</u>	<u>RATE</u> <u>(G.P.M.)</u>	<u>DYNAMIC LEVEL</u> <u>(FEET)</u>	<u>DRAWDOWN</u> <u>(FEET)</u>	<u>COMMENTS</u>
4/19/74	1:00 AM	7-7.5	65'6"	37'1"	
	2:00 AM	7-7.5	65'0"	36'7"	
	3:00 AM	7-7.5	65'11"	37'6"	
	4:00 AM	7-7.5	65'9"	37'4"	
	5:00 AM	7-7.5	65'9"	37'4"	
	6:00 AM	7-7.5	65'8"	37'3"	
	6:30 AM	7-7.5	65'0"	36'7"	Water Clear
	6:45 AM	10	---	---	Opened valve to 10 GPM
	7:00 AM	10	77'7"	49'2"	Water cloudy - closed valve
	7:30 AM	7-7.5	70'0"	41'7"	Water level rising - water clearing
	8:00 AM	7-7.5	68'1"	39'8"	
	8:30 AM	7-7.5	67'5"	39'0"	Water clear - took physical & chemical sample
END 24 HOUR TEST PERIOD					Stop pump
	8:30 AM	---	67'5"	39'0"	Recovery
	8:35 AM	---	56'9"	28'4"	10'8"
	8:40 AM	---	46'5"	18'0"	10'4"
	8:45 AM	---	39'4"	10'11"	7'1"
	8:50 AM	---	33'10 $\frac{1}{2}$ "	5'5 $\frac{1}{2}$ "	5'5 $\frac{1}{2}$ "
	8:55 AM	---	32'7"	4'2"	1'3 $\frac{1}{2}$ "
	9:00 AM	---	31'9"	3'4"	10"
	1:00 PM	---	30'0"	1'7"	1'9"

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ADDITIONAL TEST - 1

STATIC LEVEL - 28 $\frac{1}{4}$ FEET BELOW ORIGINAL GROUND

PUMP INTAKE - 83 $\frac{1}{2}$ FEET BELOW ORIGINAL GROUND

<u>DATE</u>	<u>TIME</u>	<u>RATE (G.P.M.)</u>	<u>DYNAMIC LEVEL (FEET)</u>	<u>DRAWDOWN (FEET)</u>	<u>COMMENTS</u>
4/23/74	8:45 AM	---	28'3" (STATIC)	---	Start pumping
	9:00 AM	10	33'4"	5'1"	Water cloudy
	9:30 AM	10	34'4"	6'1"	Water clear
	10:00 AM	10	34'6 $\frac{1}{2}$ "	6'3 $\frac{1}{2}$ "	
	10:30 AM	10	34'9 $\frac{1}{2}$ "	6'6 $\frac{1}{2}$ "	
	11:00 AM	10-	34'9 $\frac{1}{2}$ "	6'6 $\frac{1}{2}$ "	Rate dropped - readjusted to 10 GPM
	11:30 AM	10	35'11"	7'8"	
	12:00 NOON	10	36'0"	7'9"	Water cloudy
	12:30 PM	10	36'5 $\frac{1}{2}$ "	8'2 $\frac{1}{2}$ "	Water clearing
	1:00 PM	10	36'8 $\frac{1}{2}$ "	8'5 $\frac{1}{2}$ "	
	1:30 PM	10	36'10"	8'7"	Water clear
	2:00 PM	10	36'10 $\frac{1}{2}$ "	8'7 $\frac{1}{2}$ "	
	2:30 PM	10	37'4"	9'1"	Water cloudy
	3:00 PM	10	37'6"	9'3"	Water clearing
	3:30 PM	10	37'8"	9'5"	Water clear
	3:45 PM	10	37'8"+	9'5"+	End pumping
	3:45 PM	---	37'8"+	9'5"+	Recovery
	3:50 PM	---	30'8 $\frac{1}{2}$ "	2'5 $\frac{1}{2}$ "	7' (+) "
	3:55 PM	---	30'4"	2'1"	4 $\frac{1}{2}$ " "
	4:00 PM	---	30'2 $\frac{1}{2}$ "	1'11 $\frac{1}{2}$ "	1 $\frac{1}{2}$ " "
	4:05 PM	---	30'1 $\frac{1}{2}$ "	1'10 $\frac{1}{2}$ "	1" "
	4:10 PM	---	30'1 $\frac{1}{2}$ "	1'9 $\frac{1}{2}$ "	1" "
	4:15 PM	---	30'0"	1'9"	$\frac{1}{2}$ " "

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DELMAR, NEW YORK

ADDITIONAL TEST - 2

STATIC LEVEL - 29 FEET BELOW ORIGINAL GROUND

PUMP INTAKE - 83½ FEET BELOW ORIGINAL GROUND

<u>DATE</u>	<u>TIME</u>	<u>RATE (G.P.M.)</u>	<u>DYNAMIC LEVEL (FEET)</u>	<u>DRAWDOWN (FEET)</u>	<u>COMMENTS</u>
4/24/74	10:30 AM	---	29'0" (STATIC)	---	Start pumping
	10:45 AM	15	43'6"	14'6"	Water cloudy
	11:00 AM	15	54'6½"	25'6½"	
	11:15 AM	15	61'7"	32'7"	
	11:30 AM	15	66'11"	37'11"	
	11:45 AM	15	70'5"	41'5"	
	12:00 NOON	15	74'2½"	45'2½"	
	12:05 PM	10	---	---	Closed valve to 10 GPM Water clearing
	12:15 PM	10	60'4"	31'4"	Water clear - water level rising
	12:26 PM	---	---	---	Generator failure

9 Samaritan Dr.

BACTERIOLOGICAL EXAMINATION OF WATER

(Submit a card for each bottle filled)

Laboratory number 17051 Date collected APRIL 19 1974 Date received in lab 2/1/74
Sample from Town of BETHLEHEM County of ALBANY Owner of supply NYS CONSERVATION
Tenant of property DEPT OF ENVIRONMENTAL CONSERV Sampling Point WELL PUMP OUTLET
Separate chemical sample being submitted? Yes ☒ No ☐ Date of previous sample NONE

WELL: Dug ☐ Drilled ☒ Driven ☐ Depth of well 93 FEET Diameter 8 INCH
Type of cover _____ Curb _____ Casing CAP Depth of casing 89.5 FEET Type of pump SUBMERSIBLE

SPRING: Location: Steep slope ☐ Level ground ☐ Type of cover _____ Type of curb _____

Supply chlorinated when sampled: Yes ☐ No ☒ Residual chlorine _____

Indicate whether surplus water pumped or surface drainage can enter the water supply. NO
Any recent repairs? NO Construction: NO

State geologic character of surrounding soil CLAY OVER GRAVEL + ROCK

Identify all possible sources of pollution and indicate distance of each from the water supply NONE

(include privies, cesspools, septic tanks, tile fields, barnyards, fertilized areas)

Indicate whether water supply is involved in reported illness, if any NO

Signed Vance Dugan Title SR. ENGINEERING GEOLOGIST

Send report to: Dr. C. A. Adams, Inc. Bill to: 3 AMB

(DO NOT WRITE BELOW THIS LINE)

Examined by: 122 Date 1/20/21

Bacteria per ml : agar 35°C-24 hrs. 1/ml

(Most Probable Number per 100 ml.)

Coliform Group: (Membrane Filter Colonies per 100 ml.) less than 1/100 ml.

These results indicate that the water was/was not of a satisfactory sanitary quality when sampled. satisfactory

Remarks: _____

Supervisor

REPORT II

BENDER HYGIENIC LABORATORY

9 Samaritan Dr., off Hackett Boulevard
Albany, N.Y. 12208

Water Sample — Chemical Examination

(City ALBANY)
 Samples from (Village BETULEHAM)
 (check which) (Township NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION)
 Owner of water supply WELL PUMP OUTLET (PIPE OFFICE) Tenant of property FIVE RIVERS EDUCATIONAL CENTER
 Sampling point WELL PUMP OUTLET (PIPE OFFICE)
 Separate bacteriologic sample being submitted? Yes X No
 Supply chlorinated when sampled: Yes X No
 Sample collected by James Burman (Signature)
 Date of last sample
 Residual chlorine
 Title SENIOR ENGINEERING GEOLOGIST, NYS D.O.T.
 (County Inspector, Owner, etc.)

Send Report to: NAME DICK FERRAROLI INC
 ADDRESS RD #1 ALTAMONT, N.Y. 12009

Bill to: NAME SAMIZ
 ADDRESS

RESULTS OF CHEMICAL EXAMINATION (*)

Color <u>5</u> units	Nitrate, as N <u>N.D.</u> mg/L
Turbidity <u>1.6</u> units	Nitrite, as N <u>N.D.</u> mg/L
Odor <u>0</u>	Ammonia, as N <u>N.T.</u> mg/L
pH <u>7.8</u> units	Iron <u>0.2</u> mg/L
Alkalinity, as Ca CO ₃ <u>326</u> mg/L	Manganese <u>N.D.</u> mg/L
Bicarbonate <u>N.D.</u> mg/L	Fluoride <u>0.56</u> mg/L
Carbonate <u>N.D.</u> mg/L	Chemical Oxygen Demand <u>N.T.</u> mg/L
Hardness, as Ca CO ₃ <u>142</u> mg/L	MBAS (Surfactants) <u>N.T.</u> mg/L
Chloride <u>12</u> mg/L	Conductance <u>600</u> Micro Mhos
Sulfate <u>8</u> mg/L	Other <u> </u>

(*) Additional analysis, if required, reported as Supplemental Chemical Analysis.

Abbreviations: N.D. — Not detected mg/L — Milligrams per Liter
 N.T. — No test (not requested or insufficient sample) < — "Less than"

Supervisor: Moynah

00970



LRI